

Stated Meeting, October 21, 1870.

Dr. EMERSON in the Chair.

Present, seven members.

Dr. Brinton stated that the Choctaw Grammar, recently published by the Society, is being translated into German. It appears from two letters recently received from Dr. Berendt, at present prosecuting his researches into the Maya language and history in Central America, that he has added an additional amount of knowledge of the subject equal to that which was possessed before.

Prof. Cope read a paper on the Osteology of Megaptera Bellicosa, one of the few whalebone whales of economic value found within the tropics. He gave a detailed account of the structure of a specimen from the island of St. Bartholomew, W. I., and its variations from known species of Megaptera, especially in the forms of the mandible and nasal bones.

Dr. Emerson read a paper on the part taken by the American Philosophical Society and Franklin Institute in establishing stations for meteorological observations, detailing arrangements for procuring full reports from fifty-two points in the State of Pennsylvania. He spoke of the important bearing which those efforts had had upon the present state of meteorological science.

In February last, the Congress of the United States passed a law for instituting meteorological observations throughout the country by means of Government telegrams. This duty has been assigned to the War Department, and active measures are now in progress to carry out the objects contemplated by the act of our National Legislature.

Through the medium of a pamphlet issued by the Signal Officer appointed by the War Department, we are informed that stations for making observations have already been designated throughout all of our States and Territories, from the Atlantic to the Pacific. By such means, we shall soon be put in possession of data for determining the conditions of the atmosphere over a vast region, and enabled to trace the boundaries and progressive movements of storms and tornadoes, which, generally following definite courses, may have their coming anticipated through storm signals.

Such utilization of simultaneous meteorological observations, with immediate transmission by the magnetic telegraph, is now carried on in England and most parts of Europe, including Norway, Denmark, Holland, Belgium, Prussia, Austria, France, Italy, and throughout the Russian Empire. At your breakfast table in London, Paris, or any other of the principal cities of Europe, you can now read in the *Times*, *Galignani*, and other leading newspapers, the condition of the weather almost at the same hour in the morning, in every part of Europe.

More than thirty years ago, a very active interest was taken in this country, and especially in this city, in regard to meteorological investigations, and especially those relating to the origin and progression of storms. Espy, Redfield, Loomis and Olmstead, on this side of the Atlantic, were the most prominent leaders in the investigations carried on.

The work was not, however, left entirely to individuals, but learned societies engaged in it. In this city, a "*Joint Committee on Meteorology*" was instituted, consisting of four members of this Society and five members of the Franklin Institute, which for several years labored in the collection of observations, and other measures calculated to promote the advancement of meteorological knowledge, and the programme of their plans was almost identical with that now proposed to be carried out under the auspices of Government.

The primary meeting of this "Joint Committee" was held on the 9th of September, 1834, and the first project set on foot by it was the establishment of competent observers, in different parts of our State and country, to make simultaneous observations of the conditions of the weather, the occurrence of storms of rain, hail or snow, the direction of the wind and atmospheric currents, quantities of aqueous precipitations, movements of the barometrical column, temperature, &c.

Of the nine members of this "Joint Committee" when first appointed, I find myself the only survivor; and it seems to me a duty I owe to the Society by which I was appointed, to bear testimony to its former efforts for the advancement of meteorological science—efforts made at a time when the only means of transmission was by the tardy and costly mail service, now superseded by the marvellous capacities combined in the magnetic telegraph.

For carrying out the projects of the "Joint Committee" money was needed. This could not be advanced by our Society, then in a condition of pecuniary embarrassment, nor by the Franklin Institute, which, strange to say, in this great city, where it should be cherished as a grand capitol of the industrial arts creating most of wealth, has always been comparatively poor.

In this dilemma, application was made to the Legislature of our Commonwealth, from which liberal appropriations in money were obtained for our use, \$4,000 at one session, and \$3,000 at another. Some of this money was used by the "Joint Committee" to defray expenses incurred in printing, corresponding and collecting reports. The largest portion, however, was spent in supplying each of the fifty-two counties then in the State,

with a set of instruments, consisting of a barometer, two thermometers (one self-registering), and a rain-gauge.* The manufacture and distribution of these instruments was all entrusted by the Committee to my own supervision. Most, if not all, of these instruments doubtless exist at the present day, in the court-houses or academies in the counties to which they were sent.

At the time to which I refer, I was much devoted to meteorological investigations, and for several years delivered lectures on meteorology, before the class of the Franklin Institute. I made observations several times a day, noting the atmospheric changes as to density, temperature, dew-point, winds, aqueous precipitations, &c. &c. It was whilst so engaged, that I made a communication to this Society, relative to the inapplicability, in this country, of the prognostic words inscribed on the scale-plates of European barometers, such as *fair*, *set fair*, *rainy*, &c., which generally indicate the reverse of the prognostic on this side of the Atlantic, where the barometer has never acquired any high degree of credit as a weather-glass. "Stormy" is, perhaps, the only inscription which might be retained for both sides of the Atlantic at or near the sea-level.

In the course of my observations, I found that storms from the north and north-east were generally preceded by high risings in the barometer, especially during the winter months. This observation was recognized as original by Sears C. Walker, a distinguished member of this Society, and by Mr. Espy, who regarded it as one of the main supports of his theory of storms. My communication upon these subjects, I suppose, still exists among the manuscripts in the archives of this Society. In reference to the barometers made for distribution in this State, it is worthy of notice that they do not contain the European inscriptions on their scale plates, "fair," "set fair," &c., which, as I have already stated, are calculated to mislead observers on the western side of the Atlantic, and bring the instrument into discredit. Another reason for omitting the inscriptions exists in the fact, that many of the barometers went to points in the State so greatly elevated as to render deceptive and useless any inscriptions made on scales graduated from the sea level. The main consideration of the Committee was to ascertain the fluctuations of the mercurial column as influenced by atmospheric conditions.

In pursuing his investigations concerning the phenomena connected with the origin and movements of storms, tornados, and water-spouts, Mr. Espy was chiefly indebted for his data to the materials brought together by the labors of the "Joint Committee," from which he was enabled to map the courses of many remarkable storms, hurricanes and water-spouts, which drew marked attention from men of science at home and abroad.

In 1840, Mr. Espy went to Europe, and laid his views before the British

*The original standard barometer and thermometer from which the other instruments were graduated, are now in the possession of the Frank

	Days.
	Hour.
	Temperature of Air.
	Temperature of Wet Bulb,
	Dew Point.
	Course of Wind.
	Lower Strata of Clouds.
	Middle Strata of Clouds.
	Upper Strata of Clouds.
	Strength of Wind.
	Weather.
	Beginning of Rain.
	End of Rain.
	Barometer.
	Observations.

Directions to Observers accompanying First Circular of Joint Committee.

Scientific Association, accompanied by numerous maps and diagrams. His communication elicited great interest, and, after its reading, was discussed by some of the most eminent men in the grand Scientific Congress, among whom were Professors Forbes and Phillips, and Sir David Brewster.

Mr. Espy also visited Paris, and communicated his views to the French Academy, by which a committee was appointed to report upon the subject, consisting of Messrs. Arago, Pouillet, and Babinet. A report was made at considerable length, containing a beautiful analysis of Mr. Espy's theory, with conclusions extremely flattering to our countryman. This, with the paper read before the British Association, may be found in Mr. Espy's treatise on the Philosophy of Storms—a work which contains much of the information collected by the "Joint Committee" in a condensed form.

I cannot conclude this communication without expressing my opinion, that a strong and very effective impulse was given to meteorological investigations at home and abroad by the combined efforts of this Society and its associate, in organizing that system of simultaneous meteorological observations which has since been spread over the European continent, and is now resumed in our own country under the most favorable conditions.

In claiming for our Society the credit fairly due for its efforts formerly made in the cause of meteorology, I do not wish to derogate from the just claims of other institutions or individuals who have been working earnestly in the same field of philosophical research. Any proper notice of even one of these—the Smithsonian Institute, for example—would lead me beyond the just limits of a communication adapted to the usual order of business established by this Society.

The names appended to the first Circular issued in September, 1834, by the "Joint Committee," were

JAMES P. ESPY, *Chairman*,
 GOUVERNEUR EMERSON, M. D.,
 C. N. BANCKER,
 ALEXANDER D. BACHE,

Committee of American Philosophical Society.

JAMES P. ESPY,
 ALEX. D. BACHE,
 H. D. ROGERS,
 S. C. WALKER,
 P. B. GODDARD, M. D.

Committee of Franklin Institute.

Mr. Briggs made some remarks on the results in meteorology obtained by Prof. Henry twelve years ago.

Pending nominations, Nos. 662 and 663 were read.

After balloting for Candidates for Membership, the following named gentlemen were declared to be duly elected members of the Society :—

Mr. Henry F. Q. D'Aligny, of New York.

Mr. William P. Blake, of New Haven, Conn.

Mr. George L. Vose, of Salem, Mass.

Mr. J. Imbrie Miller, of Pennsylvania.

Mr. Eckley B. Coxe, of Philadelphia.

And the Society was adjourned.

Stated Meeting, Nov. 4th, 1870.

Vice-President, Prof. CRESSON, in the Chair.

Present, eight members.

Letters were read from Nassau Hall and Yale College, acknowledging the receipt of Proceedings and Transactions.

The following letter was received from the Philadelphia College of Pharmacy, transmitting copies of resolutions adopted by them on the subject of the establishment of a Botanic Garden in Fairmount Park, and asking concurrence, and the appointment of a committee.

PHILADELPHIA, Nov. 2d, 1870.

SIR :—

In accordance with instructions, it is my agreeable duty to communicate to you the following action of the Philadelphia College of Pharmacy.

At a Stated Meeting of the Board of Trustees of the Philadelphia College of Pharmacy, held November 1st, the following Resolutions were unanimously adopted :—

“*Resolved*, That a Committee of three be selected to confer with the Park Commissioners, in conjunction with other Committees that may be